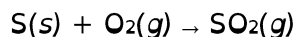


## ANSWERS: Sulfur, sulphur dioxide and sulphuric acid

1. Acid is a good electrolyte because it dissociates / forms ions easily ( $\text{H}^+$  and  $\text{SO}_4^{2-}$ ). Ions are charged particles which can conduct a current through a solution.

When a battery is being used / discharged, the concentration of the acid decreases. This causes the battery to go flat, as the ions have been removed. The battery then needs recharging to reverse the reactions, and reform acid again. This then increases its concentration.

2. Pungent, colourless gas that is choking



To conduct electricity, a solution must contain charged particles. Water molecules are electrically neutral, so cannot conduct electricity.

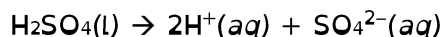
When sulfuric acid forms a solution with water, ions are formed. Ions are charged particles and therefore can conduct electricity.



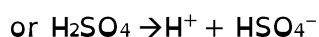
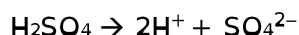
OR



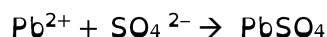
OR



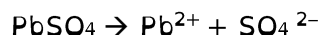
3. Sulfuric acid is a good electrolyte because it dissociates / forms ions easily ( $\text{H}^+$  and  $\text{SO}_4^{2-}$ .)



The sulfuric acid reacts with the lead plates to form  $\text{PbSO}_4$ , water and creates energy.



When a battery is being used / discharged, the concentration of the acid decreases. This causes the battery to go flat as the sulfate ions have been removed. The battery then needs recharging to reverse the reactions, return the sulfate ions and forming sulfuric acid again. This then increases its concentration.



Over time, the concentration of sulfuric acid falls and is not replenished in charging and eventually the battery needs replacing.

